

Claims

- Sahy
- [c1] 1. A hybrid power system for supplying power to a load, comprising:
an energy storage device; and,
a fuel cell system
wherein said energy storage device supplies all of said power when a state of charge of said energy storage device is greater than a first predetermined state of charge and said fuel cell system provides at least a portion of said power when said state of charge of said energy storage device is less than or equal to said first predetermined state of charge.
- [c2] 2. The hybrid power system of claim 1 wherein said load comprises an electric vehicle.
- [c3] 3. The hybrid power system of claim 1 wherein said first predetermined state of charge is between about seventy percent and ninety percent.
- [c4] 4. The hybrid power system of claim 1 wherein said fuel cell system supplies all of said power when said state of charge of said energy storage device is less than a second predetermined state of charge.
- [c5] 5. The hybrid power system of claim 4 wherein said second predetermined state of charge is between about twenty percent and about fifty percent.
- [c6] 6. The hybrid power system of claim 1 wherein all of said power is supplied by said fuel cell system when said state of charge of said energy storage device is less than or equal to said first predetermined state of charge and a power requirement of said load is less than or equal to an optimal power output of said fuel cell system.
- [c7] 7. The hybrid power system of claim 1 wherein said power is supplied by both said energy storage device and said fuel cell system when said state of charge of said energy storage device is less than or equal to said first predetermined state of charge and a power requirement of said load is greater than an optimal power output of said fuel cell system.
- [c8] 8. The hybrid power system of claim 1 wherein said fuel cell system charges

said energy storage device when said state of charge of said energy storage device is less than or equal to said first predetermined state of charge.

[c9]

9. A hybrid power system for supplying power to a load, comprising:

an energy storage device; and,

a fuel cell system

wherein said energy storage device supplies all of said power when a state of charge of said energy storage device is greater than a first predetermined state of charge, said fuel cell system supplies all of said power when said state of charge of said storage device is less than or equal to said first predetermined state of charge and a power requirement of said load is less than or equal to an optimal power output of said fuel cell system, and said energy storage device and said fuel cell both supply said power when said state of charge of said energy storage device is less than or equal to said first predetermined state of charge and said power requirement of said load is greater than said optimal power output of said fuel cell system.

[c10]

10. The hybrid power system of claim 9 wherein said load comprises an electric vehicle

[c11]

11. The hybrid power system of claim 9 wherein said first predetermined state of charge is between about seventy percent and ninety percent.

[c12]

12. The hybrid power system of claim 9 wherein said fuel cell system supplies all of said power when said state of charge of said energy storage device is less than a second predetermined state of charge.

[c13]

13. The hybrid power system of claim 9 wherein said second predetermined state of charge is between about twenty percent and about fifty percent.

[c14]

14. A method of supplying power to a load, comprising the steps of:

providing an energy storage device and a fuel cell system; and,

controlling said energy storage device and said fuel cell system

wherein said energy storage device supplies all of said power when a state of charge of said energy storage device is greater than a first predetermined state of charge and said fuel cell system provides at least a portion of said power

when said state of charge of said energy storage device is less than or equal to said first predetermined state of charge.

[c15] 15. The hybrid power system of claim 14 wherein said load comprises an electric vehicle.

[c16] 16. The hybrid power system of claim 14 wherein said first predetermined state of charge is between about seventy percent and ninety percent.

[c17] 17. The hybrid power system of claim 14 wherein said fuel cell system supplies all of said power when said state of charge of said energy storage device is less than a second predetermined state of charge.

[c18] 18. The hybrid power system of claim 14 wherein said second predetermined state of charge is between about twenty percent and about fifty percent.

[c19] 19. The hybrid power system of claim 14 wherein all of said power is supplied by said fuel cell system when said state of charge of said energy storage device is less than or equal to said first predetermined state of charge and a power requirement of said load is less than or equal to an optimal power output of said fuel cell system.

[c20] 20. The hybrid power system of claim 14 wherein said power is supplied by both said energy storage device and said fuel cell system when said state of charge of said energy storage device is less than or equal to said first predetermined state of charge and a power requirement of said load is greater than an optimal power output of said fuel cell system.